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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,433	07/21/2003	Won-Hee Choe	030681-536	4965

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EXAMINER	
LUU, MATTHEW	
ART UNIT	**PAPER NUMBER**
3663	

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/622,433	CHOE ET AL.	
	Examiner	Art Unit	
	LUU MATTHEW	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5,7-9 and 13* is/are rejected.

7)☒ Claim(s) *2-4, 6, 10-12 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 5, 7-9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messing et al (US 2004/0061710) and Shiraishi et al (5,280,347) or Inuiya et al (6,882,364).

Regarding claim 1, Messing et al disclose (Figs. 1 and 2) a method for rendering a color image on a display apparatus (6) in which a pixel expressing an input image (4) is formed with triad-structured sub-pixels (R,G,B), the method comprising:

(a) filtering step is used to make the resolution of the input image (higher-resolution image 4) correspond to the resolution of the display (lower-resolution triad display 6) (page 1, section [0003], lines 1-5);

(b) obtaining a representative value (the R,G,B values) of a sub-pixel (16) of the display apparatus (6) corresponding to a consideration area (10,12,14) which is an area processed by the filter in the input image (page 1, section [0003], lines 5-9); and

c) rendering the filtered sub-pixel value on the display apparatus (page 1, section [0003], and lines 5-9).

The only difference between the disclosure of Mess et al and the claimed invention is that the claim requires a "scaling filter". Mess et al also fails to disclose a rhombus-shaped filter.

However, it is obvious to a person of ordinary skill in the art to recognize that, because the input image resolution is higher than the display apparatus resolution, a number of N input image pixels will be scaled or reduced correspondingly to a single display pixel. Consequently, in displaying an input image on such a color liquid crystal display (LCD), it has been known to process the image by associating N image picture pixels with each display pixel. Therefore, the resolution filter of the Messing et al display apparatus is nevertheless a scaling filter. Furthermore, it would have been obvious to a person of ordinary skill in the art to substitute the Messing's prefilter for the scaling filter since the Messing's prefilter is functional equivalent to claimed "scaling filter".

With regard to the "rhombus shaped" filter, Shiraishi ('347) discloses (Figs. 7, 11 and 27) a delta-structured sub-pixels arrangement and a rhombus shaped color filter (Fig. 27). See column 15, lines 4-21.

On the other hand, Inuiya ('364) also discloses (Figs. 6, 7A and 7B) a square shaped filter rotated by 45 degrees to a rhombus shaped filter (Column 10, lines 16-26).

Therefore, it would have been obvious to use the rhombus shaped color filter of Shiraishi or the rhombus shaped filter of Inuiya into the color image display system of Messing et al to prevent the color moirés effect in a color image display system.

Regarding claim 5, Messing et al disclose (Figs. 1 and 2) a method for rendering a color image on a display apparatus (6) in which a pixel expressing an input image (4) is formed with triad-structured sub-pixels (R,G,B), the method comprising:

(a) filtering step is used to make the resolution of the input image (higher-resolution image 4) correspond to the resolution of the display (lower-resolution triad display 6) (page 1, section [0003], lines 1-5);

(b) obtaining a representative value (the R,G,B values) of a sub-pixel (16) of the display apparatus (6) corresponding to a consideration area (10,12,14) which is an area processed by the filter in the input image (page 1, section [0003], lines 5-9);

c) obtaining the value of the sub-pixel based on the difference of pixels in the consideration area in the input image (page 1, section [0006], and lines 1-3. Furthermore, it is well known in the art the weighted averaging value is obtained by calculating the difference of the neighboring sub-pixels);

(d) performing gamma correction of the sub-pixel value (page 7, section [0078], Fig. 16); and

(e) rendering the gamma-adjusted sub-pixel value on the display apparatus (Fig. 16, RGB space converter 552, wherein the RGB gamma corrected image is output to the display).

The only difference between the disclosure of Mess et al and the claimed invention is that the claim requires a "scaling filter". Mess et al also fails to disclose a rhombus-shaped filter.

However, it is obvious to a person of ordinary skill in the art to recognize that, because the input image resolution is higher than the display apparatus resolution, a number of N input image pixels will be scaled or reduced correspondingly to a single display pixel. Consequently, in displaying an input image on such a color liquid crystal display (LCD), it has been known to process the image by associating N image picture pixels with each display pixel. Therefore, the resolution filter of the Messing et al display apparatus is nevertheless a scaling filter. Furthermore, it would have been obvious to a person of ordinary skill in the art to substitute the Messing's prefilter for the scaling filter since the Messing's prefilter is functional equivalent to claimed "scaling filter".

With regard to the "rhombus shaped" filter, Shiraishi ('347) discloses (Figs. 7, 11 and 27) a delta-structured sub-pixels arrangement and a rhombus shaped color filter (Fig. 27). See column 15, lines 4-21.

On the other hand, Inuiya ('364) also discloses (Figs. 6, 7A and 7B) a square shaped filter rotated by 45 degrees to a rhombus shaped filter (Column 10, lines 16-26).

Therefore, it would have been obvious to use the rhombus shaped color filter or Shiraishi or the rhombus shaped filter of Inuiya into the color image display system of Messing et al to prevent the color moirés effect in a color image display system.

Regarding claim 7, Mess et al further disclose (Fig. 16) the value of the output sub-pixel is corrected based on the gamma value of individual R,G,B components.

Regarding claim 8, which is an apparatus claim of claim 5, please note the rejection as set forth above with respect to claim 5.

Regarding claims 9 and 13, Mess et al further teach a computer program for the method of claim 1. Page 3, section [0042], lines 1-2, "Elements of the system may be embodied in hardware, firmware, and/or software".

Allowable Subject Matter

Claims 2-4, 6, 10-11, 12, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Regarding to the Applicant's argument, at page 2 of the remarks, with respect to the "rhombus-shaped" consideration area, Messing discloses (Fig. 1) a method that uses a prefilter for resolution adjustment between the high resolution input image (4) and the lower resolution of the display device (6). Messing also discloses (Figs. 1 and 2) a triad-structure sub-pixels configuration. Messing further discloses (Fig. 18) another sub-pixel configuration having a "rhombus-shape consideration area, which is different than the triad-structure configuration of Figs. 1 and 2.

Furthermore, as shown in Fig. 18 of Messing, the blue rhombus-shaped filter (B) is considered as the "rhombus-shaped consideration area", since the area being considered for the blue color filtering is within the boundary of the particular shape of the filter (B).

Furthermore, the particular shape of the filter or area would not render the claims patentable. In re Dailey, 149 USPQ 47 (CCPA 1967).

In response to applicant's argument that "The present invention deals with an image rendering technology for displaying images while Shiraishi deals with an image scanning technology for inputting existing images" (Page 2 of the remarks) is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for

rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

In this case, although Shiraishi deals with an image scanning technology, but the scanning device is an input portion of a recording/reproduction image processing system. For example, the scanning device is a recording medium, whereas a display device may be a reproduction medium for reproducing the scanned image onto the display device for viewing or for printing on a printer. Therefore, in order to display the scanned image on the display device, the scanned image must be rendered on the display screen before the viewer can view it. The only way to reproduce the scanned image is to render the scanned image on a display screen, otherwise, there is no use for scanning the image if it is not reproduced.

Shiraishi ('347) discloses (Figs. 7, 11 and 27) a delta-structured sub-pixels arrangement and a rhombus shaped color filter (Fig. 27). See column 15, lines 4-21. Furthermore, a "rhombus-shape" is merely a square being rotated by 45 degrees. Since the "consideration area" only being processed within the boundary of the particular shape of the filter, the rhombus shaped color filter (Fig. 27) is considered to be the "consideration area".

And the reasons to combine Shiraishi with Messing are to prevent the color moirés effect in a color image display system, as suggested by Shiraishi (Column 15, lines 17-21).

In response to applicant's argument that "With respect to Inuiya, the Applicants respectfully submit that it is improper to combine this reference with Messing to render the presently claimed invention obvious" (Page 4 of the remarks) is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

In this case, although Inuiya deals with technology to capture images from a digital camera or digital video camera, but it is well known in art that the digital camera or digital video camera is an input portion of a recording/reproduction image processing. For example, the digital camera or digital video camera is a recording medium, whereas a display device (Fig. 59A, display 51f) may be a reproduction medium for reproducing the recorded image onto the display device for viewing or for printing on a printer. Column 41, lines 35-40.

Therefore, in order to display the recorded image on the display device, the recorded image must be rendered on the display screen.

Regarding to the Applicant's argument, at page 4 of the remarks, with respect to the "rhombus-shaped" consideration area, Messing discloses (Fig. 1) a method that uses a prefilter for resolution adjustment between the high resolution input image (4) and the lower resolution of the display device (6). Messing further discloses (Fig. 18)

another sub-pixel configuration having a "rhombus-shape consideration area, which is different than the triad-structure configuration of Figs. 1 and 2.

Furthermore, as shown in Fig. 18 of Messing, the blue rhombus-shaped filter (B) is considered as the "rhombus-shaped consideration area", since the area being processed is only within the boundary of the particular shape of the filter (B).

Furthermore, the particular shape of the filter or area would not render the claims patentable. In re Dailey, 149 USPQ 47 (CCPA 1967).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUU MATTHEW whose telephone number is (571) 272-7663. The examiner can normally be reached on Flexible Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JACK KEITH can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. Luu

MATTHEW LUU
PRIMARY EXAMINER